

CLAIMS

1. Process for producing a thin sheet of ultra-low-carbon steel for the manufacture of drawn products for packaging, in which process:

5 - a killed and vacuum-degassed steel containing, by weight, between 0.10 and 0.35% manganese, less than 0.006% nitrogen, less than 0.025% phosphorus, less than 0.020% sulphur, less than 0.020% silicon, at most 0.08% of one or more of the elements copper, nickel and chrome,  
10 mium, as well as aluminium,  
the balance of the composition consisting of iron and inevitable impurities, is produced,

15 - the steel is cast in the form of a slab,  
- the slab is hot rolled at a temperature above Ar<sub>3</sub> in order to obtain a strip of hot-rolled sheet,  
- the hot-rolled sheet is coiled,  
- the hot-rolled sheet is cold rolled into the form of an intermediate cold-rolled sheet,  
- the intermediate cold-rolled sheet is continuously annealed at a temperature below A<sub>c1</sub>,  
20 - the intermediate cold-rolled sheet is rerolled down to a final sheet thickness for drawing, characterized in that the steel is produced so as to contain at most 0.006% carbon by weight and 0.010% aluminium by weight and in that the said hot-rolled sheet is coiled at a temperature below 620°C and preferably between 530 and 570°C.

25 2. Process according to Claim 1, characterized in that the steel contains at most 0.001% titanium by weight and 0.001% niobium by weight and in that the cold-rolled sheet is annealed at a temperature below 700°C for a time of less than 3 minutes and preferably about 30 seconds.

30 3. Process according to Claim 2, for the manufacture of a thin drawing sheet using the DRD drawing-redrawing process, characterized in that the hot-rolled sheet has a thickness of about 2.3 mm, in that the hot-rolled sheet is rolled with a reduction ratio of between 85 and 89%, in that the cold-rolled intermediate sheet is annealed by continuous annealing at a temperature of approximately

650°C, for approximately twenty seconds, and in that the cold-rolled intermediate sheet is rerolled in a skin-pass rolling mill with a reduction ratio of between 23 and 31%.

5 4. Process according to Claim 2 for the production  
of a drawing sheet using the DWI drawing and wall ironing  
process, characterized in that the hot-rolled sheet has  
a thickness of about 3 mm, in that the hot-rolled sheet  
is cold rolled with a reduction ratio of 90 to 93%, in  
10 that the intermediate cold-rolled sheet is continuously  
annealed at a temperature of about 670°C for a time of  
about thirty seconds and in that, after annealing, the  
intermediate sheet is rerolled in a skin-pass rolling  
mill with a reduction ratio of between 2.5 and 17%.

15 5. Process according to any one of Claims 1 to 4, characterized in that the steel is killed in contact with a slag having an adjusted amount of aluminium and of alumina.

6. Process according to claim 5,  
20 characterized in that the steel is cast in the form of a  
slab in an inert-atmosphere continuous casting plant.

7. Thin sheet of ultra-low-carbon steel, for the manufacture of drawn packaging products, containing, by weight, between 0.10 and 0.35% manganese, less than 0.006% nitrogen, less than 0.025% phosphorus, less than 0.020% sulphur, less than 0.020% silicon, at most 0.08% of one or more of the elements copper, nickel and chromium, as well as of aluminium, the balance of the composition consisting of iron and inevitable impurities, the thin sheet being obtained by cold rolling a hot-rolled sheet by a first rolling operation and by a second rolling operation separated by a continuous annealing operation, characterized in that the steel of the sheet contains at most 0.006% carbon by weight and 0.010% aluminium by weight, in that it has a homogeneous structure with equiaxed grains and in that it has a Lankford coefficient ( $r_{aver}$ ) greater than 1.6 and a plane anisotropy coefficient ( $\Delta C$ ) close to 0.